



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

## Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker  
Governor

Karyn E. Polito  
Lieutenant Governor

Kathleen A. Theoharides  
Secretary

Martin Suuberg  
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### DRAFT

February 24, 2021

John J. Judge, Pinehills, LLC  
33 Summerhouse Drive  
Plymouth, MA 02360

Town: Plymouth  
PWS ID# 4239055  
WMA Permit #: Permit 9P3-4-21-239.03  
Program: Water Management Act  
Action: Draft Permit

Dear Mr. Judge:

Please find the following attached:

- DRAFT Findings of Fact in Support of Permit #9P3-4-21-239.03; and
- DRAFT Water Management Act Permit #9P3-4-21-239.03 for the Pinehills Water Company.

Consistent with 310 CMR 36.27(6) - (8) of the revised Water Management Act Regulations promulgated on November 7, 2014, MassDEP will now publish notice in the Environmental Monitor that a DRAFT Permit is available for review and comment for 30 days. Notice of the public comment period will also be sent to all registrants, permittees and those having non-consumptive use statements within the South Coastal River Basin. MassDEP expects to issue the final permit within 30 days of the close of the public comment period.

If you have any questions concerning this letter, please contact Julie Butler at (617) 292-5552 or [Julie.Butler@mass.gov](mailto:Julie.Butler@mass.gov).

Sincerely,

Duane LeVangie  
Water Management Program  
Bureau of Water Resources

eCC:	Neal Price, Horsley Witten Group	Dorie Stolley, Watershed Action Alliance
	Marisa Picone-Devine, Sarian Company	Jennifer Pederson, MWWA
	Deborah Sedares, Pinehills LLC	Julia Blatt and Sarah Bower, Mass Rivers Alliance
	Mettie Whipple, Eel River Watershed Association	

Y: DWPArchive\ SERO\2021\Plymouth-4239055-Pinehills-9P342123903-WMA DRAFT Permit-2021-02-24

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**Massachusetts Department of Environmental Protection**  
**One Winter Street, Boston MA 02108 • Phone: 617-292-5751**  
**Communication For Non-English Speaking Parties**  
 - 310 CMR 1.03(5)(a)



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Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



**6 Việt (Vietnamese):**

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.



**7 ប្រទេសកម្ពុជា (Kmer (Cambodian)):**

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាមៗ ប្រសិនបើអ្នកត្រូវបានបកប្រែ ឯកសារនេះសូមទំនាក់ទំនងឆ្នោតជាភ័ស្តុតាង MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។



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هذه الوثيقة الهامة وينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في PMassDE على أرقام الهواتف المدرجة أدناه.

**11 한국어 (Korean):**

이 문서는 중요하고 즉시 번역해야 합니다. 당신이 번역이 문서가 필요하다면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다.

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این سند مهم است و باید فوراً ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدیر PMassDE در شماره تلفن های ذکر شده در زیر.

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यह दस्तावेज़ महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.



# Department of Environmental Protection

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## **Findings of Fact in Support of DRAFT Water Management Permit #9P3-4-21-239.03 Pinehills Water Company**

The Department of Environmental Protection (“MassDEP” or “the Department”) has completed its review of the Pinehills Water Company (“Pinehills”) Water Management Act (WMA) new permit application. This review was conducted in regard to the permit for Pinehills to withdraw water from the South Coastal Basin. The Department hereby **proposes to issue** Water Management Permit #9P3-4-21-239.03 (the “Permit”) in accordance with the Water Management Act (M.G.L. c. 21G). The Department makes the following Findings of Fact in support of the attached Permit, and includes herewith its reasons for issuing the Permit and for the conditions of approval imposed, as required by M.G.L. c. 21G, § 11, and 310 CMR 36.00. The Permit is being issued since such action is necessary for the promotion of the purposes of M.G.L. c. 21G. The Department may modify, suspend or terminate the Permit, after notice and hearing, for violations of its conditions, of M.G.L. c. 21G, or of regulations adopted or orders issued by the Department, and when deemed necessary for the promotion of the purposes of the Water Management Act.

**The Department adopted revised Water Management Regulations at 310 CMR 36.00 on November 7, 2014, (described in greater detail below). Since that time, the Department has been working closely with each Water Management Act (WMA) permittee to fully consider all aspects of their individual situations and ensure thoughtful and implementable permits.**

### **Withdrawal Description and History**

Pinehills was issued WMA Permit #9P3-4-21-239.03 on June 16, 1999 to withdraw water from three groundwater wells in the South Coastal Basin. The authorized annual average withdrawal volume was 167.90 million gallons per year (MGY), for an average daily withdrawal of 0.46 million gallons per day (MGD). Pinehills’ largest withdrawal volume to date was 0.45 MGD in 2015. Pinehills’ reported use between 2016 and 2019 ranged from 0.39 MGD to 0.44 MGD.

As amended on July 8, 2004, Pinehills’ permit included the performance standards of the WMA policy at the time (unaccounted-for-water (UAW) of 15% or less, and residential gallons per capita day water use (RGPCD) of 80 gallons or less). To date, Pinehills has maintained compliance with these standards.

The July 8, 2004 amendment also included the addition of four wells to be used for irrigation of common areas; no increase in volume was authorized by this amendment. On October 3, 2007, a

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separate WMA permit #9P4421239.11 was issued to Pinehills LLC and Pinehills Landowners Association for irrigation of common areas. The common area irrigation permit included these four wells. As a result, the permit was again modified on August 7, 2008 to remove the four irrigation wells.

On February 21, 2019, the permit was renewed and incorporated changes to meet requirements of the November 2014 Water Management Regulation Revisions described below (page 3). These changes included the following: updated performance standards pertaining to residential gallons per capita day (RGPCD) and unaccounted for water (UAW); enhanced water conservation standards and outdoor water use restrictions; and a mitigation plan.

This permit authorizes an increase in the maximum annual average withdrawal volume (see Special Condition 1) as well as the maximum daily withdrawal volume (see Special Condition 2). These changes were requested by Pinehills in order to accommodate anticipated demand of The Pinehills development through its full buildout. Since its original water-demand projections over 20 years ago, Pinehills' commercial sector has changed. Initial plans for the area included significant retail, office and commercial uses; however, actual development trends within The Pinehills featured a larger proportion of apartment complexes, which resulted in higher density residential water uses than originally anticipated. On May 14, 2020, Pinehills received New Source Approval (NSA) for the increased maximum daily withdrawal volume from their wells from the Department's Drinking Water Program following completion of a five-day pumping test and report submittal. Pinehills also recently received a Water Needs Forecast (WNF) from the Department of Conservation and Recreation (DCR), as described under Special Condition 1 below.

### **Permit Extensions**

Pinehills' original permit (later amended) was issued on June 16, 1999 and was originally set to expire on August 31, 2010. Because the expiration dates for all Water Management permits were extended for four years by Chapter 240 of the Acts of 2010, as amended by Chapter 238 of the Acts of 2012, collectively known as the Permit Extension Act, the Department accepted a renewal application from Pinehills dated May 28, 2010. The Department published notice of the permit renewal application in the Environmental Monitor on June 23, 2010. No comments were received.

In addition, in a letter of September 25, 2015, the Department informed Pinehills that the Department would need additional time before making a determination on the application in order to ensure that all permit renewal applicants in the South Coastal Basin fully understood the new Water Management Regulations (discussed below), and to give proper consideration to all permit renewal applications within the basin. Pursuant to M.G.L. c. 30A, § 13, and 310 CMR 36.18(7), Pinehills' existing permit continues in force and effect until the Department issues a final decision on the permit renewal application. The expiration date for all permits going forward in the South Coastal Basin will be August 31, 2030, in order to restore the staggered permitting schedule set forth in the regulations.

### **The Water Management Act (M.G.L. c. 21G)**

The WMA requires the Department to issue permits that balance a variety of factors including without limitation:

- Impact of the withdrawal on other water sources;
- Water available within the safe yield of the water source;
- Reasonable protection of existing water uses, land values, investments and enterprises;
- Proposed use of the water and other existing or projected uses of water from the water source;
- Municipal and Massachusetts Water Resources Commission (WRC) water resource management plans;
- Reasonable conservation consistent with efficient water use;
- Reasonable protection of public drinking water supplies, water quality, wastewater treatment capacity, waste assimilation capacity, groundwater recharge areas, navigation, hydropower resources, water-based recreation, wetland habitat, fish and wildlife, agriculture, flood plains; and
- Reasonable economic development and job creation.

### **Water Management Regulation Revisions**

In 2010 the Executive Office of Energy and Environmental Affairs (EEA) convened the Sustainable Water Management Initiative (SWMI) for the purpose of incorporating the best available science into the management of the Commonwealth's water resources. SWMI was a multi-year process that included a wide range of stakeholders and support from the Departments of Environmental Protection, Fish and Game, and Conservation and Recreation. In November 2012 the *Massachusetts Sustainable Water Management Initiative Framework Summary* (<http://www.mass.gov/eea/docs/eea/water/swmi-framework-nov-2012.pdf>) was released.

On November 7, 2014, the Department adopted revised Water Management Regulations at 310 CMR 36.00 that incorporate elements of the SWMI framework and the Water Conservation Standards adopted by the Massachusetts WRC. The regulations reflect a carefully developed balance to protect the health of Massachusetts' water bodies while meeting the needs of businesses and communities for water.

Without limitation, the Department has incorporated the following into Water Management permitting:

- Safe yield determinations for the major river basins based on a new methodology developed through SWMI (see description that follows);
- Water needs forecasts for public water suppliers developed by the Department of Conservation and Recreation, Office of Water Resources (DCR), using a methodology reviewed and approved by the Massachusetts WRC;
- Water supply protection measures for public water supplies including Zone II delineations for groundwater sources, and wellhead and surface water protection measures as required by Massachusetts Drinking Water Regulations (310 CMR 22.00);

- Water conservation and performance standards reviewed and approved by the WRC in July 2018 (<https://www.mass.gov/massachusetts-water-conservation-standards>), including without limitation:
  - Performance standard of 65 residential gallons per capita day or less;
  - Performance standard of 10% or less unaccounted-for-water;
  - Seasonal limits on nonessential outdoor water use;
  - A water conservation program that includes leak detection and repair, full metering of the system and proper maintenance of the meters, periodic review of pricing and education and outreach to residents and industrial and commercial water users;
- Environmental protections developed through SWMI, including without limitation:
  - protection for coldwater fish resources;
  - minimization of withdrawal impacts in areas stressed by groundwater use;
  - mitigation of the impacts of increasing withdrawals; and
- The special permit conditions in each Water Management Act permit.

### **Safe Yield in the South Coastal Basin**

This permit is being issued under the Safe Yield methodology adopted by the Department on November 7, 2014, and described in the regulations at 310 CMR 36.13. As of the date of issuance of this permit, the Safe Yield calculation for the South Coastal Basin is 70.1 million gallons per day (MGD), and total registered and permitted withdrawals are 45.25 MGD. The maximum withdrawals that are authorized in this permit, and all other permits currently under review by the Department within the South Coastal Basin, will be within the Safe Yield and conditioned as outlined in the regulations. Withdrawal authorizations are further limited by other factors, such as the impact to local resources, water quality constraints, pumping rate limits placed on individual sources, and the regulatory requirement that permit holders demonstrate a need for the water, which for public water systems is done through Water Needs Forecasts prepared by the Department of Conservation and Recreation.

### **Findings of Fact for Special Permit Conditions**

The following Findings of Fact for the special conditions included in the Permit generally describe the rationale and background for each special condition in the Permit. This Findings of Fact also explain any changes to special conditions from prior permits, when applicable. This summary of permit special conditions is not intended to, and should not be construed as, modifying any of the permit special conditions. In the event of any ambiguity between this summary and the actual permit conditions, the permit language shall control.

#### **Special Condition 1, Maximum Authorized Annual Average Withdrawal Volume**

Special Condition 1 authorizes an annual average withdrawal volume of 237.35 million gallons per year (MGY) or 0.65 million gallons per day (MGD) annually from Pinehills' sources in the South Coastal Basin. This volume is an increase from the previously permitted volume of 167.90 MGY (0.46 MGD). As described above (see Withdrawal Description and History), this increase was requested by Pinehills in order to accommodate anticipated demand of The Pinehills development through its full buildout and was based on internal water demand projections.

The Department bases public water supplier (PWS) permit allocations on DCR Office of Water Resources water needs forecasts (WNFs). In an August 29, 2019 letter to Pinehills, DCR



provided a WNF that was prepared based on two separate assumptions: 1) Pinehills meets the performance standards of 65 RGPCD and 10% UAW; and 2) Pinehills' RGPCD and UAW continue based on the trends of RGPCD and UAW at the time that DCR prepared the WNF. DCR's WNF is set forth in the table below.

DCR's August 2019 WNF for Pinehills (units of MGD)

Period	Assuming 65 RGPCD/ 10% UAW	Assuming current trend RGPCD/UAW
2021-2025	0.58	0.60
2025-2030	0.65	0.68
5% Buffer	0.03	0.03

It is the Department's policy to issue permits that result in a total authorized volume that does not exceed the DCR WNF volumes based on the assumption that the PWS is in compliance with the RGPCD and UAW performance standards. As the table shows, the authorized volume of 0.65 MGD set forth in Special Condition 1 does not exceed that forecast.

### **Special Condition 2, Maximum Daily Withdrawal Volume**

Special Condition 2 specifies the maximum daily volume that Pinehills is authorized to withdraw from its permitted wells. Pinehills has reported on its Annual Statistical Reports (ASRs) maximum daily withdrawal volumes in compliance with the combined rate for Wells 1, 2 and 3. This Permit authorizes an increase in the maximum daily volume from 1.41 mgd to 1.63 mgd. In its July 16, 2020 WMA permit application, Pinehills reported that the proposed maximum day pumping rate was calculated based on a peaking factor of 2.5 times the average daily demand, which in turn was based on the last five years of its actual water use data. This rate was approved by the Department as part of the New Source Approval that Pinehills received May 14, 2020, and it was the withdrawal rate during the November 2019 five-day pumping test that Pinehills conducted per NSA requirements.

### **Special Condition 3, Zone II Delineation**

Wells 1, 2 and 3 have a MassDEP-approved Zone II. In February 2021 Pinehills supplied the Town of Plymouth with the appropriate GIS files for the updated Zone II (based on the November 2019 pumping test analysis) and requested that the revised Zone II be adopted as part of the Town's Aquifer Protection District. In its Town Meeting scheduled for May 2021, the Town plans to vote to amend its Zoning Bylaw, Section 206-1 – "Aquifer Protection District" as it relates to the delineation of the district and to amend the Town's Official Zoning Map to revise the boundaries of the Aquifer Protection District.

### **Special Condition 4, Wellhead Protection**

Pinehills currently meets wellhead protection requirements through controls implemented by the Town of Plymouth.



**Special Condition 5, Performance Standard for Residential Gallons Per Capita Day (RGPCD) and**

**Special Condition 6, Performance Standard to Unaccounted for Water (UAW)**, are part of the previously referenced *Water Conservation Standards for the Commonwealth of Massachusetts* adopted by the Massachusetts Water Resources Commission in July 2018.

The **Residential Gallons Per Capita Day** performance standard required of all PWS permittees is 65 RGPCD. Permittees that cannot meet the performance standard within the timeframe in the permit must meet Functional Equivalence requirements outlined in Appendix A. Pinehills' 15-year RGPCD record indicates that it has never exceeded the RGPCD standard. Its RGPCD values from the past five years are shown in the table below.

Pinehills' RGPCD, 2015-2019				
2015	2016	2017	2018	2019
64	54	51	52	49

The **Unaccounted for Water** performance standard required for all PWS permittees is 10% for 2 out of every 3 years. Permittees that cannot comply within the timeframe in the permit must meet the Functional Equivalence requirements based on the *AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36*, as outlined in Appendix B. As shown in the table below, Pinehills has met the standard in the past five years. It has also met the standard for the rest of its 15-year UAW record (2005-2019).

Pinehills' UAW, 2015-2019				
2015	2016	2017	2018	2019
9%	2%	1%	2%	2%

**Special Condition 7, Water Conservation Requirements**

This condition incorporates the previously referenced Water Conservation Standards for the Commonwealth of Massachusetts reviewed and approved by the WRC in July 2018. They are provided in Table 4 of the Permit.

Given that Pinehills had not completed a PWS Water Conservation Questionnaire since 2008 and has since undergone significant development, Pinehills completed the Water Conservation Questionnaire again in December 2020 at the Department's request. The questionnaire did not reveal any non-compliance with the requirements but did indicate that the system is due for a full leak detection survey. Pinehills noted in the questionnaire that it will complete a full survey in 2021. The Permit requires the survey results to be attached to Pinehills' 2021 ASR.

**Special Condition 8, Seasonal Limits on Nonessential Outdoor Water Use**

This condition requires Pinehills to implement nonessential outdoor water use restrictions annually from May 1 to September 30. Each year Pinehills can choose to implement restrictions based on the calendar (May 1- September 30) or when either of the following two conditions are in effect: 1) when the Massachusetts Drought Management Task Force declares a drought Level 1 ("Mild", formerly "Advisory") or higher (Level 2-Significant, Level 3-Critical, or Level 4-Emergency) for the Southeast Region; or 2) when groundwater levels at an assigned USGS monitoring well fall below the groundwater trigger for 60 consecutive days.

In the event that Pinehills selects the latter approach, it has been assigned the following USGS monitoring well: #415453070434901 - MA-PWW 22 Plymouth, MA. The monthly groundwater trigger values are shown in Table 5 of the Permit. Pinehills shall be responsible for tracking groundwater levels and recording when groundwater-triggered restrictions are implemented. See the groundwater- and drought-tracking instructions in Table 5 for guidance. Pinehills shall also be responsible for tracking the Massachusetts Drought Management Task Force drought declarations and recording when drought-triggered restrictions are implemented.

### **Special Condition 9, Requirement to Report Raw and Finished Water Volumes**

This condition ensures that the information necessary to evaluate compliance with the permit conditions is accurately reported.

### **Special Condition 10, Mitigation Plan**

The Permit includes a condition that requires mitigation of withdrawals over a baseline volume. Mitigation of withdrawals over a baseline volume are required, if feasible, if future withdrawals exceed the assigned baseline volume. Baseline withdrawal means the volume of water withdrawn during calendar year 2005 plus 5%, or the average annual volume withdrawn from 2003 through 2005 plus 5%, whichever is greater, provided that:

- (a) baseline cannot be less than a permittee's registered volume;
- (b) baseline cannot be greater than the permittee's authorized volume for 2005; and
- (c) if, during the period from 2003 to 2005, the permittee's withdrawals from the water source were interrupted due to contamination of the source or construction of a treatment plant, the Department will use best available data to establish a baseline volume from the water source.

The calculated baseline withdrawal volume for Pinehills Water Company is 84.315 MGY (0.23 MGD) based on their 2005 withdrawal volume plus 5%. Pinehills is required to mitigate 0.42 MGD, which is the difference between its renewal request of 0.65 MGD and the baseline of 0.23 MGD. An 85% adjustment can be applied against the mitigation volume for systems with wastewater that is returned to the ground within the same major basin as the withdrawal, because the Department assumes 85% of the water withdrawn will be returned to the subsurface. Pinehills locally discharges all of its wastewater via an onsite wastewater treatment plant (for which it holds a MassDEP Groundwater Discharge Permit SE#1-680M); therefore, it qualifies for the 85% adjustment and the resulting mitigation volume is 0.063 MGD.

While the Permit includes an evaluation of the request over baseline specific to this permit for the Pinehills Water Company, the Department and Pinehills LLC also evaluated the baselines and mitigation options available for the OS Golf Club permit (9P4-4-21-239.09) and the Pinehills Landowners Association Common Area Irrigation permit (9P4-4-21-239.11).

Mitigating the impacts of increasing withdrawals can be through direct or indirect mitigation activities. Direct mitigation activities can be volumetrically quantified and compared to the permittee's mitigation volume, whereas indirect mitigation activities will improve streamflow and/or fluvial habitat but cannot be volumetrically quantified. Pursuant to 310 CMR 36.22(6), permittees shall first evaluate direct mitigation activities, which include, but are not limited to: surface water releases, stormwater recharge, or infiltration and inflow removal from sewer systems.

Pinehills LLC did not identify any direct mitigation options at this time. All stormwater and wastewater infiltrate locally, and it does not have a reservoir from which to release surface water.

Therefore, in consultation with the Department, Pinehills LLC selected indirect mitigation activities to fulfill its mitigation requirements. As outlined in the 2014 Water Management Act Permit Guidance, one indirect mitigation credit translates into 0.01 MGD of mitigation.

Pinehills LLC's indirect mitigation activities are summarized in Appendix C. They include land protection, stormwater standards, low-impact development (LID) practices, private well restrictions, and participation in the Audubon Cooperative Sanctuary Program (ACSP). Appendix C summarizes not only the mitigation credits needed for this permit but also for the OS Golf Club permit and the Pinehills Landowners Association Common Area Irrigation permit. Pinehills LLC identified 43.33 credits through its various mitigation activities for the entire property, and 6.3 of those credits are being applied to this permit.

Special conditions for four of the five mitigation activities (namely land protection, stormwater standards, LID practices, and private well restrictions) are included in WMA Permit 9P4-4-21-239.11, because the permit holder (collectively Pinehills LLC and Pinehills Landowners Association) is responsible for the implementation of those activities. Requirements specific to the fifth mitigation activity, ACSP participation, are included in the OS Golf permit, because OS Golf is responsible for implementation of that particular activity. In addition, appendices D and E contain certification forms pertaining to the mitigation activities. Pinehills LLC and the Pinehills Landowners Association certified that the Department's mitigation criteria have been and will continue to be met throughout the permit period.

**Minimization of Groundwater Withdrawal Impacts in Stressed Subbasins** requires permittees with permitted groundwater sources in subbasins<sup>1</sup> with net groundwater depletion of 25% or more during August to minimize their withdrawal impacts on those subbasins to the greatest extent feasible.

Because the Pinehills' permitted sources are located where August net depletion has not been established, minimization measures are not required.

**Coldwater Fish Resource Protection** was incorporated into the Water Management Regulations in November 2014. Coldwater Fish Resource Protection is not a condition of this permit because the Pinehills withdrawals do not impact any waters that MA Division of Fisheries and Wildlife has identified as supporting coldwater fish at this time.

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<sup>1</sup> Subbasins used for WMA permitting are the 1,395 subbasins delineated by the U.S. Geological Survey in *Indicators of Streamflow Alteration, Habitat Fragmentation, Impervious Cover, and Water Quality for Massachusetts Stream Basins* (Weiskel *et al.*, 2010, USGS SIR 2009-5272).



# Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker  
Governor

Karyn E. Polito  
Lieutenant Governor

Kathleen A. Theoharides  
Secretary

Martin Suuberg  
Commissioner

## **DRAFT** WATER WITHDRAWAL PERMIT M.G.L. c. 21G

This issuance of Permit #9P3-4-21-239.03 is approved pursuant to the Massachusetts Water Management Act (WMA) for the sole purpose of authorizing the withdrawal of a volume of water as stated below and subject to the following special and general conditions. This permit conveys no right in or to any property.

**PERMIT NUMBER:** 9P3-4-21-239.03

**RIVER BASIN:** South Coastal

**PERMITTEE:** Pinehills Water Company  
33 Summerhouse Drive  
Plymouth, Massachusetts 02360

**ISSUANCE DATE:** MONTH XX, YEAR

**EXPIRATION DATE:** August 31, 2030

**TYPE AND NUMBER OF WITHDRAWAL POINTS:**

Groundwater: 3  
Surface Water: 0

**USE:** Public Water Supply

**DAYS OF OPERATION:** 365

**LOCATIONS:**

**Table 1. Withdrawal Point Identification**

Source Well Name	Source Code
Well #1	4239055-01G
Well #2	4239055-02G
Well #3	4239055-03G

## **SPECIAL CONDITIONS**

### **1. Maximum Authorized Annual Average Withdrawal Volume**

This permit authorizes Pinehills Water Company (Pinehills) to withdraw water from the South Coastal Basin at the rate described in Table 2 below. The permitted volume is expressed both as an average daily withdrawal rate (million gallons per day or MGD), and as a total annual withdrawal volume (million gallons per year or MGY) for each period of the permit term.

The Department of Environmental Protection (Department) will use the raw water withdrawal volume from all authorized withdrawal points to assess compliance with the permitted withdrawal volumes.

**Table 2. Maximum Authorized Annual Average Withdrawal Volume per Permit Period**

Permit Periods	Permit	
	Daily Average (MGD)	Total Annual (MGY)
M/D/YYYY to 8/31/2025	0.58*	211.70*
9/1/2025 to 8/31/2030	0.65	237.35

\* With specific advance written approval from MassDEP, Pinehills is authorized to increase the maximum authorized annual withdrawal volume to 0.65 MGD prior to August 31, 2025 provided that Pinehills is meeting the following Special Permit Conditions:

- Residential Gallons per Capita Day,
- Unaccounted-for water or all UAW functional equivalence requirements,
- Seasonal Limits on Nonessential Outdoor Water Use, and
- Water Conservation Requirements.

### **2. Maximum Authorized Daily Withdrawal Volume**

Withdrawals from Pinehills' permitted sources are not to exceed the approved maximum rates listed below without specific advance written approval from the Department.

**Table 3. Maximum Daily Withdrawal Rates**

Sources	Maximum Daily Rate MGD and Gallons per Minute (GPM)
Well #1, 4239055-01G Well #2, 4239055-02G Well #3, 4239055-03G	Combined Maximum Daily Rate of 1.63 MGD (1,132 gpm)

**3. Zone II Delineation**

Department records show that Wells #1, 2 and 3 have an approved Zone II delineation; no further Zone II work is required.

**4. Wellhead Protection**

Pinehills currently meets wellhead protection requirements through controls implemented by the Town of Plymouth.

**5. Performance Standard for Residential Gallons per Capita Day Water Use**

Pinehills' performance standard for residential gallons per capita day (RGPCD) is 65 gallons or less. Pinehills shall be in compliance with this performance standard. If, at any time, Pinehills does not meet the RGPCD performance standard, it shall comply with the functional equivalence requirements set forth in Appendix A. Pinehills shall report its RGPCD water use annually in its Annual Statistical Report (ASR).

**6. Performance Standard for Unaccounted for Water**

Pinehills' performance standard for Unaccounted for Water (UAW) is 10% or less of overall water withdrawals for 2 of the most recent 3 years throughout the permit period. If Pinehills does not meet the standard, it shall be in compliance with the functional equivalence requirements based on the AWWA/IWA Water Audits and Loss Control Programs, Manual of Water Supply Practices M36, as outlined in Appendix B.

Nothing in the permit shall prevent a permittee who meets the 10% performance standard from demonstrating compliance with the UAW performance standard by developing and implementing a water loss control program following the AWWA M36 Water Audits and Loss Control Programs.

Pinehills shall report its UAW percentage annually in its Annual Statistical Report (ASR). Permittees meeting the Performance Standard for Unaccounted for Water through implementation of a water loss control program based on AWWA M36 annual water audits and guidance shall continue to report UAW annually as required in the Annual Statistical Report for public water suppliers.

**7. Water Conservation Requirements**

At a minimum, Pinehills shall implement the water conservation measures listed in Table 4. Compliance with the water conservation requirements shall be reported to the Department upon request, unless otherwise noted below.

**Table 4. Minimum Water Conservation Requirements**

**Leak Detection**

1. At a minimum, conduct a full leak detection survey every three years. The Permittee shall conduct a full survey in 2021. The Permittee shall attach the survey results to its 2021 ASR.
  2. Conduct leak detection of the entire distribution system within one year whenever the percentage of UAW increases by 5% or more (for example an increase from 3% to 8%) over the percentage reported on the ASR for the prior calendar year. Within 60 days of completing the leak detection survey, submit to the Department a report detailing the survey, any leaks uncovered as a result of the survey or otherwise, dates of repair and the estimated water savings as a result of the repairs.
  3. Conduct field surveys for leaks and repair programs in accordance with the AWWA Manual 36.
  4. Pinehills shall have repair reports available for inspection by the Department. Pinehills shall establish a schedule for repairing leaks that is at least as stringent as the following:
    - Leaks of 3 gallons per minute or more shall be repaired within 3 months of detection.
    - Leaks of less than 3 gallons per minute at hydrants and appurtenances shall be repaired as soon as possible.
    - Leaks of less than 3 gallons per minute shall be repaired in a timely manner, but in no event more than 6 months from detection, except that leaks in freeway, arterial or collector roadways shall be repaired when other roadwork is being performed on the roadway.
    - Leaks shall be repaired in accordance with the permittee's priority schedule including leaks up to the property line, curb stop or service meter, as applicable.
    - The permittee shall have water use regulations in place that require property owners to expeditiously repair leaks on their property.
- The following exceptions may be considered:
- Repair of leakage detected during winter months can be delayed until weather conditions become favorable for conducting repairs;\* and
  - Leaks in freeway, arterial or collector roadways may be coordinated with other scheduled projects being performed on the roadway\*\*.

\*Reference: MWRA regulations 360 CMR 12.09

\*\*Mass Highway or local regulations may regulate the timing of tearing up pavement to repair leaks.

**Metering**

1. Calibrate all source and finished water meters at least annually and report date of calibration on the ASR.
2. Pinehills reports its system is 100% metered. All water distribution system users shall have properly sized service lines and meters that meet AWWA calibration and accuracy performance standards as set forth in AWWA Manual M6 – Water Meters.
3. Pinehills shall have an ongoing program to inspect individual service meters to ensure that all service meters accurately measure the volume of water used by its customers. The metering program shall include regular meter maintenance, including testing, calibration, repair, replacement and checks for tampering to identify and correct illegal connections.
4. Ensure sufficient funds in the annual budget to calibrate, repair, or replace meters as necessary.

**Pricing**

1. Pinehills shall maintain a water pricing structure that includes the full cost of operating the water supply system. Full cost pricing recovers all costs as applicable, including:
  - pumping and distribution equipment cost, repair and maintenance;
  - water treatment;



- electricity;
- capital investment, including planning, design and construction;
- land purchase and protection;
- debt service;
- administrative costs including systems management, billing, accounting, customer service, service studies, rate analyses and long-range planning;
- conservation program including audits, leak detection equipment, service and repair, meter replacement program, automated meter reading installation and maintenance, conservation devices, rebate program, public education program;
- regulatory compliance; and
- staff salaries, benefits training and professional development.

Note that Pinehills' pricing is subject to the rate-setting rules and regulations of the Department of Public Utilities (DPU).

2. Evaluate rates at a minimum every three to five years and adjust costs as needed.

3. Pinehills shall not use decreasing block rates. Decreasing block rates which charge lower prices as water use increases during the billing period are not allowed by M.G.L. c. 40, § 39L.

#### **Residential and Public Sector Conservation**

1. Pinehills shall meet the standards set forth in the Federal Energy Policy Act, 1992 and the Massachusetts Plumbing Code.

2. Pinehills shall meter or estimate water used by contractors using fire hydrants for pipe flushing and construction.

#### **Industrial and Commercial Water Conservation**

1. Pinehills shall ensure water conservation practices in all development proposals, particularly low flow devices and water-wise landscaping practices.

#### **Lawn and Landscape**

1. Develop and adopt or update as necessary, a water use restriction bylaw, ordinance or regulation that authorizes enforcement of the seasonal limits on nonessential outdoor water use required by this permit.  
MassDEP has developed the "DEP Model Outdoor Water Use Bylaw/Ordinance" to help municipalities and water districts implement seasonal water conservation requirements. The Model Bylaw also includes options for regulating private wells and in-ground irrigation systems. See <http://www.mass.gov/eea/agencies/massdep/water/regulations/model-water-use-restriction-bylaw-ordinance.html>

#### **Public Education and Outreach**

1. Pinehills shall continue to implement its water conservation and education efforts designed to educate water customers on ways to conserve water. Without limitation, Pinehills' plan may include the following actions:

- Billing that helps customers track, compare, and make sense of their use.
- Target outreach to customers who may have a leak or who are using significantly more water than similar customers.
- Offer indoor low-flow retrofit/rebate programs.
- Provide information on "water-wise landscaping" and efficient irrigation and lawn care practices on-line and through model landscapes, workshops, local garden clubs, retailers, and environmental organizations.
- Partner with local schools to develop age-appropriate curricula on the local water system and water conservation.

- Use social media, online tools, public service announcements, and local events to promote water conservation and alerts.
  - Develop multilingual materials as needed.
  - Partner with garden clubs, farmers' markets, environmental organizations, energy utilities, and others on campaigns promoting wise water use.
2. Upon request of the Department, the Pinehills shall report on its public education and outreach effort, including a summary of activities developed for specific target audiences, any events or activities sponsored to promote water conservation and copies of written materials.

## 8. Seasonal Limits on Nonessential Outdoor Water Use

Pinehills shall limit nonessential outdoor water through mandatory restrictions from May 1<sup>st</sup> through September 30<sup>th</sup> as outlined in Table 5. To the extent feasible, all summer outdoor water use should take place before 9 a.m. and after 5 p.m. when evaporation and evapotranspiration rates are lower.

**Table 5. Seasonal Limits on Nonessential Outdoor Water Use**

<b>Permittee must at a minimum implement the following outdoor water use restrictions:</b>						
<b>Groundwater level Triggered Restrictions</b>						
Nonessential outdoor water use is allowed no more than TWO DAYS per week before <b>7 a.m. and after 7 p.m.</b> whenever:						
a) Groundwater levels at USGS Monitoring Well 415453070434901 (PWW 22) Plymouth, MA decline to or below the groundwater trigger for 60 consecutive days. The monthly trigger levels are listed below and are the period of record monthly 25 <sup>th</sup> percentile depth to water level values, as determined and published by the USGS. Restrictions could start on May 1, so monitoring of PWW 22 begins on March 1 of each year.						
Trigger Values for Outdoor Water Use Restrictions (feet below land surface)*						
March	April	May	June	July	Aug	Sept
24.46	24.1	24.06	24	24.44	24.97	25.25
*As of 3/10/2016						
Once implemented, the restrictions shall remain in place until the daily value of the groundwater levels at the assigned USGS monitoring well have recovered to less than the trigger for 30 consecutive days (when the water table elevation has risen above the trigger level);						
Or						
b) A Drought Level 1 (Mild) or higher (Level 2-Significant, Level 3-Critical, or Level 4-Emergency) is declared by the Massachusetts Drought Management Task Force for Southeastern MA.						

<b>Instructions for Accessing U.S. Geologic Survey Groundwater Level and Massachusetts Drought Advisory Website Information</b>
<b>Groundwater level information</b> is available at the USGS National Water Information System (NWIS): Web Interface. The USGS NWIS default shows Massachusetts

groundwater levels in real time, *i.e.*, the most recent, usually hourly, water level measured and recorded at each USGS monitoring well. Seasonal Limits on Nonessential Outdoor Water Use are implemented when the daily mean depth to water level exceeds the designated trigger for 60 consecutive days (*i.e.*, when the depth to water becomes larger than the trigger value as the water table elevation declines). The daily water level is compared to the trigger for that month. To determine if restrictions must be implemented on May 1 it is necessary to monitor the daily water level in March and April.

**Mean daily groundwater level** readings are available at the USGS NWIS Web Interface at [http://waterdata.usgs.gov/ma/nwis/current/?type=gw&group\\_key=county\\_cd](http://waterdata.usgs.gov/ma/nwis/current/?type=gw&group_key=county_cd)

- Scroll down to 415453070434901 MA-PWW 22, Plymouth, MA.
- Click on the station number.
- On the pull-down menu “Available data for this site” choose “Daily data”.
- Under “Available Parameters ” click on “WaterLevel, BelowLSD (Mean)”.
- Under “Output Format” click on “Table” and enter the number of days of records (the default is 7 days; entering 60 will give you 60 days of data) and hit “GO”.
- The table provides the “Daily Mean Depth to water level, feet below land surface” for the most recent number of days chosen.
- Compare each day’s value to its month’s trigger value (25<sup>th</sup> percentile) in your permit. Outdoor water use restrictions must be implemented when the daily depth to water level is at or below the trigger for 60 consecutive days.

**Nothing in the permit shall prevent Permittee from implementing water use restrictions that are more stringent than those set forth in this permit.**

Pinehills shall document compliance with the Seasonal Limits on Nonessential Outdoor Water Use annually in its Annual Statistical Report (ASR), and indicate whether it anticipates implementing calendar triggered restrictions or streamflow triggered restrictions during the next year.

### **Restricted Nonessential Outdoor Water Uses**

**Nonessential outdoor water uses that are subject to mandatory restrictions include:**

- irrigation of lawns via automatic irrigation system or sprinklers;
- filling swimming pools;
- washing of vehicles, except in a commercial car wash or as necessary for operator safety; and
- washing of exterior building surfaces, parking lots, driveways or sidewalks, except as necessary to apply surface treatments such as paint, preservatives, stucco, pavement or cement.

**The following uses may be allowed** when mandatory restrictions are in place:

- irrigation to establish a new lawn and new plantings during the months of May and September;
- irrigation of public parks and recreational fields by means of automatic sprinklers outside the hours of 9 am to 5 pm; and
- watering lawns, gardens, flowers and ornamental plants by means of a hand-held hose or drip irrigation system; and
- irrigation of lawns by means of a hand-held hose.

**Water uses NOT subject to mandatory restrictions** are those required:

- for health or safety reasons;
- by regulation;
- for the production of food and fiber;
- for the maintenance of livestock; or
- to meet the core functions of a business (for example, irrigation by golf courses as necessary to maintain tees, greens, and limited fairway watering, or irrigation by plant nurseries as necessary to maintain stock).

### **Public Notice of Seasonal Limits on Nonessential Outdoor Water Use Restrictions**

Pinehills shall notify its customers of the restrictions and the consequences of failing to adhere to the restrictions.

- For calendar-triggered restrictions, customers shall be notified by April 15<sup>th</sup> each year.
- For groundwater-triggered restrictions, when the water level at the assigned USGS monitoring well falls below a water-level trigger for 60 consecutive days, customers shall be notified as soon as possible, but within three days of implementing the restrictions.

Notice to customers shall include the following:

- A detailed description of the restrictions and penalties for violating the restrictions<sup>2</sup>;
- The need to limit water use, especially nonessential outdoor water use, to ensure a sustainable drinking water supply and to protect natural resources and streamflow for aquatic life; and
- Ways individual homeowners can limit water use, especially nonessential outdoor water use.

Notice that restrictions have been put in place shall be filed each year with MassDEP within 14 days of the restriction's effective date. Filing shall be in writing on the Water Use Restrictions Form at

<http://www.mass.gov/eea/agencies/massdep/water/watersheds/municipal-water-use-restrictions.html>

In any one year, notice to customers and MassDEP need not be provided if Permittee has already implemented water use restrictions that conform to the applicable restrictions and those restrictions are still in force.

Nothing in this permit shall prevent Pinehills from implementing water use restrictions that are more stringent than those set forth in this permit.

## **9. Reporting Requirements**

Pinehills shall report annually on its ASR the raw water volumes and finished water volumes for the entire water system. Monthly raw water volumes for individual water withdrawal points shall be reported annually in the ASR.

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<sup>2</sup> Note that monetary penalties imposed by Pinehills require approval by DPU and must be included in an official rate tariff for the water utility.

## **10. Mitigation Plan**

Pinehills Water Company is required to mitigate 0.063 MGD for its renewed permitted withdrawals over its baseline volume. The requirement will be met with the indirect mitigation activities summarized in Appendix C. Pinehills LLC identified 43.33 credits through its mitigation activities, and 6.3 of those credits are being applied to this permit. Appendices D and E contain certification forms pertaining to the mitigation activities. Pinehills LLC and the Pinehills Landowners Association certified that the Department's mitigation criteria have been and will continue to be met throughout the permit period.

## **GENERAL PERMIT CONDITIONS (applicable to all Permittees)**

No withdrawal in excess of 100,000 gallons per day over the registered volume (if any) shall be made following the expiration of this permit, unless before that date the Department has received a renewal permit application pursuant to and in compliance with 310 CMR 36.00.

1. **Duty to Comply** The Permittee shall comply at all times with the terms and conditions of this permit, the Act and all applicable State and Federal statutes and regulations.
2. **Operation and Maintenance** The Permittee shall at all times properly operate and maintain all facilities and equipment installed or used to withdraw up to the authorized volume so as not to impair the purposes and interests of the Act.
3. **Entry and Inspections** The Permittee or the Permittee's agent shall allow personnel or authorized agents or employees of MassDEP to enter and examine any property, inspect and monitor the withdrawal, and inspect and copy any relevant records, for the purpose of determining compliance with this permit, the Act or the regulations published pursuant thereto, upon presentation of proper identification and an oral statement of purpose.
4. **Water Emergency** Withdrawal volumes authorized by this permit are subject to restriction in any water emergency declared by MassDEP pursuant to M.G.L. c. 21G, §§ 15-17, M.G.L. c. 111, § 160, or any other enabling authority.
5. **Transfer of Permits** This permit shall not be transferred in whole or in part unless and until MassDEP approves such transfer in writing, pursuant to a transfer application on forms provided by MassDEP requesting such approval and received by MassDEP at least thirty (30) days before the effective date of the proposed transfer. No transfer application shall be deemed filed unless it is accompanied by the applicable transfer fee established by 310 CMR 36.37.
6. **Duty to Report** The Permittee shall submit annually, on a form provided by MassDEP, a certified statement of the withdrawal. Such report is to be received by MassDEP by the date specified by MassDEP. Such report must be mailed or hand delivered to the address specified on the report form.
7. **Duty to Maintain Records** The Permittee shall be responsible for maintaining withdrawal records as specified by this permit.
8. **Metering** Withdrawal points shall be metered. Meters shall be calibrated annually. Meter shall be maintained and replaced as necessary to ensure the accuracy of the withdrawal records.

- 9. Amendment, Suspension or Termination** The Department may amend, suspend or terminate this permit in accordance with M.G.L. c. 21G or 310 CMR 36.29.

#### APPEAL RIGHTS AND TIME LIMITS

This permit is a decision of MassDEP. Any person aggrieved by this decision may request an adjudicatory hearing. Any such request must be made in writing, by certified mail and received by MassDEP within twenty-one (21) days of the date of receipt of this permit.

No request for an appeal of this permit shall be validly filed unless a copy of the request is sent by certified mail, or delivered by hand to the local water resources management official in the community in which the withdrawal point is located; and for any person appealing this decision, who is not the applicant, unless such person notifies the permit applicant of the appeal in writing by certified mail or by hand within five (5) days of mailing the appeal to MassDEP.

#### CONTENTS OF HEARING REQUEST

310 CMR 1.01(6)(b) requires the request to include a clear and concise statement of the facts which are the grounds for the request and the relief sought. In addition, the request must include a statement of the reasons why the decision of MassDEP is not consistent with applicable rules and regulations, and for any person appealing this decision who is not the applicant, a clear and concise statement of how that person is aggrieved by the issuance of his permit.

#### FILING FEE AND ADDRESS

The hearing request, together with a valid check, payable to the Commonwealth of Massachusetts in the amount of \$100 must be mailed to:

Commonwealth of Massachusetts  
Department of Environmental Protection  
P.O. Box 4062  
Boston, MA 02211

The request shall be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver as described below.

#### EXEMPTIONS

The filing fee is not required if the appellant is a municipality (or municipal agency), county, district of the Commonwealth of Massachusetts, or a municipal housing authority.

#### WAIVER

MassDEP may waive the adjudicatory hearing filing fee for any person who demonstrates to the satisfaction of MassDEP that the fee will create an undue financial hardship. A person seeking a waiver must file, together with the hearing request, an affidavit setting forth the facts which support the claim of undue hardship.

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Duane LeVangie  
Water Management Program  
Bureau of Water Resources

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Date

**Appendix A – Functional Equivalence with the 65 Residential Gallons Per Capita Day Performance Standard**

MassDEP will consider PWS permittees who cannot meet the 65 RGPCD performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling residential water use as described below.

If the permittee fails to document compliance with the RGPCD performance standard in its 2020 Annual Statistical Report (ASR), or in any ASR thereafter, then the permittee must file with that ASR a Residential Gallons Per Capita Day Compliance Plan (RGPCD Plan) which shall include, at a minimum:

1. A description of the actions taken during the prior calendar year to meet the performance standard;
2. An analysis of the cause of the failure to meet the performance standard;
3. A description of the actions that will be taken to meet the performance standard which must include, at a minimum, at least one of the following:
  - a) a program that provides water saving devices such as faucet aerators and low flow shower heads at cost;
  - b) a program that provides rebates or other incentives for the purchase of low water use appliances (washing machines, dishwashers, and toilets), or
  - c) the adoption and enforcement of an ordinance, by-law or regulation to require the installation of moisture sensors or similar climate-related control technology on all automatic irrigation systems;and may include, without limitation, the following:
  - d) the use of an increasing block water rate or a seasonal water rate structure as a tool to encourage water conservation;
  - e) a program that provides rebates or other incentives for the installation of moisture sensors or similar climate-related control technology on automatic irrigation systems;
  - f) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction include water saving devices and low water use appliances;
  - g) the adoption and enforcement of an ordinance, by-law or regulation to require that all new construction minimize lawn area and/or irrigated lawn area, maximize the use of drought resistant landscaping, and maximize the use of top soil with a high water retention rate;
  - h) the implementation of a program to encourage the use of cisterns or rain barrels for outside watering;
  - i) the implementation of monthly or quarterly billing.
4. A schedule for implementation; and
5. An analysis of how the planned actions will address the specific circumstances that resulted in the failure to meet the performance standard.

If the permittee is already implementing one or more of these programs, it must include in its RGPCD plan the continued implementation of such program(s), as well as implementation of at least one additional program. All programs must include a public information component designed to inform customers of the program and to encourage participation in the program.

RGPCD plans may be amended to revise the actions that will be taken to meet the performance standard. Amended RGPCD plans must include the information set forth above.

If a RGPCD plan is required, the permittee must:

1. submit information and supporting documentation sufficient to demonstrate compliance with its RGPCD plan annually at the time it files its ASR; and
2. continue to implement the RGPCD plan until it complies with the performance standard and such compliance is documented in the permittee’s ASR for the calendar year in which the standard is met.



## **Appendix B – Functional Equivalence with the 10% Unaccounted for Water Performance Standard**

MassDEP will consider PWS permittees who cannot meet the 10% UAW performance standard to be functionally equivalent, and in compliance with their permit, if they have an on-going program in place that ensures “best practices” for controlling water loss. The water loss control program will be based on annual water audits and guidance as described in the *AWWA/IWA Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs* (AWWA M36).

If, as of December 31, 2020, the permittee fails to document compliance with the Unaccounted for Water performance standard (UAW of 10% or less for 2 of the 3 most recent years throughout the permit period), then the permittee shall develop and implement a water loss control program following the *AWWA M36 Water Audits and Loss Control Programs* within 5 full calendar years.

1. Conduct an annual “top down” water audit, calculate the data validity level/score using AWWA Water Loss Control Committee’s Free Water Audit Software, and submit the AWWA WLCC Free Water Audit Software: Reporting Worksheet and data validity score annually with its Annual Statistical Report (ASR).
  - If a PWS’s data validity level/score is less than Level III (51-70), steps recommended through the audit(s) shall be taken to improve the reliability of the data prior to developing a long-term program to reduce real and apparent water losses.
  - Data with a validity score of 50 or less are considered too weak to be used to develop a component analysis or for infrastructure planning and maintenance.
  - Developing data with an acceptably strong validity score can be a multi-year process.
2. When the data validity score meets the Level III (51-70) requirement, the permittee shall conduct a component analysis to identify causes of real and apparent water loss and develop a program to control losses based on the results of the component analysis. The Permittee shall submit the component analysis and water loss control program with a proposed implementation schedule to the Department.
3. Continued implementation will be a condition of the permit in place of meeting the 10% UAW performance standard.
4. Upon request of the Department, the permittee shall report on its implementation of the water loss control program.

A PWS permittee may choose to discontinue the water loss program implementation if UAW, as reported on the ASR and approved by DEP, is below 10% for four consecutive years, and the water audit data validity scores are at least Level III (51-70) for the same four years.

**NOTE FOR SMALL SYSTEMS:** For small systems with less than 3,000 service connections or a service connection density of less than 16 connections per mile of pipeline, the Unavoidable Annual Real Loss (UARL) calculation and the Infrastructure Leak Index (ILI) developed as the final steps of the top down water audit may not result in valid performance indicators, and may not be comparable to the UARL and ILI calculations for larger systems.

However, these small systems can benefit from developing reliable data and conducting an annual top down water audit. Small systems can rely on the real losses (gallons per mile of main per day) performance indicator developed in the water audit as a measure of real water loss when developing a water loss control program. The M36 Manual discusses the audit process for small systems, and includes a chapter to guide small systems in understanding the results of their audits and in developing a water loss control program (*Manual of Water Supply Practices – M36, Fourth Edition, Chapter 9: Considerations for Small Systems*, pp. 293-305).

### **Appendix C – Pinehills Indirect Mitigation Credit Summary**

A mitigation plan is required for three of Pinehills LLC's (Pinehills) permits, as shown in Table C-1. Mitigating the impacts of increasing withdrawals can be through direct or indirect mitigation activities. Direct mitigation activities can be volumetrically quantified and compared to the permittee's mitigation volume, whereas indirect mitigation activities will improve streamflow and/or fluvial habitat but cannot be volumetrically quantified. Pursuant to 310 CMR 36.22(6), permittees shall first evaluate direct mitigation activities, which include, but are not limited to: surface water releases, stormwater recharge, or infiltration and inflow removal from sewer systems.

Pinehills was unable to identify any direct mitigation options at this time. All stormwater and wastewater infiltrate locally, and it does not have a reservoir from which to release surface water. Therefore, in consultation with the Department, Pinehills selected indirect mitigation activities to fulfill its mitigation requirements. As outlined in the 2014 Water Management Act Permit Guidance, one indirect mitigation credit translates into 0.01 MGD of mitigation.

**Table C-1. Mitigation required per Pinehills Permit**

WMA PERMIT NUMBER	PERMITTEE	REQUIRED CREDIT
9P3-4-21-239.03	Pinehills Water Company	6.3
9P4-4-21-239.04	Pinehills Golf Club	0.0
9P4-4-21-239.09	OS Golf Club LLC	1.5
9P4-4-21-239.11	Pinehills Landowners Association	33.0
TOTAL CREDIT REQUIRED:		40.8

Pinehills has received indirect mitigation credit for the following mitigation activities:

- land protection;
- stormwater standards;
- LID practices;
- private well restrictions; and
- participation in the Audubon Cooperative Sanctuary Program.

The basis for the credit value per activity is detailed below, and the credits are summarized in Table C-3.

Land protection: Pinehills is receiving mitigation credit for the preservation of open space along its northern property boundary within the Eel River watershed, referred to in Pinehills' Development Plan as the "western portion of the Northerly Nature Preserve". In January 2005, Pinehills recorded an Open Space Covenant delineating 136 acres to be included in the western portion of the Northerly Nature Preserve, recorded in the Plymouth County Registry of Deeds on January 12, 2005, Book 29833, Page 203.

The Department awarded 15 credits for these efforts, which is the maximum allowable credit for land protection. Specifically, 0.2 credits per acre were awarded for the 46 acres meeting the Department's definition of Priority Conservation Land, and 0.1 credits per acre were awarded for the remaining acreage until the 15-credit limit was reached. Priority Conservation Land is land classified as one or more of the following:

- Core Habitat and Critical Natural Landscapes as mapped by the Natural Heritage and Endangered Species Program (NHESP) and The Nature Conservancy (TNC) as part of BioMap<sup>23</sup>;
- Certified Vernal Pools and abutting land as designated by the NHESP;
- NHESP Priority Habitats of Rare and Endangered Species;

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<sup>3</sup> <https://www.mass.gov/service-details/massgis-data-layers>

- Areas of Critical Environmental Concern (ACECs) as designated by the Secretary of Energy and Environmental Affairs; or
- aquatic buffers including buffer zones of Coldwater Fishery Resources (CFRs) and Outstanding Resource Waters (ORWs) as designated by the Massachusetts Department of Fish and Game.

The parcel includes approximately 46 acres of BioMap2 Core Habitat and Critical Natural Landscapes as show in Figure 1 of an April 26, 2017 memo provided by Pinehills to the Department (attached). Table C-2 shows the credit assignments by acreage. Special condition 8 of WMA Permit 9P4-4-21-239.11 details the documentation and certification of the land protection.

**Table C-2. Summary of credit for Pinehills land protection**

<b>Western portion of Northerly Nature Preserve</b>	<b>Map Parcel ID</b>	<b>Acres</b>	<b>Credits per acre</b>	<b>Total Credits</b>
Priority Conservation Land	077B-000-000S-158	46	0.2	9.2
Other Conservation Land	077B-000-000S-158 079A-000-001A-017 079A-000-001A-018	58	0.1	5.8

Stormwater standards: The Department awarded 7 credits for Pinehills' stormwater standards. Specifically, 2 credits were awarded for the standards applying to the entire Pinehills property, and 5 credits were awarded for the standards' minimum regulated project size of 5,000 square feet. Special conditions 9 and 12 of WMA Permit 9P4-4-21-239.11 detail the documentation and certification of these standards.

LID practices: The Department awarded 2.33 credits for Pinehills' LID practices. Specifically, 1 credit was awarded for the clearly defined and enforceable LID requirements included in Pinehills' governing documents; and 1.33 credits were assigned for performance standards including a large percentage of open space (70%) and direct infiltration of rooftop runoff in the Eel River Watershed. Special conditions 10 and 12 of WMA Permit 9P4-4-21-239.11 detail the documentation and certification of these requirements.

Private well restrictions: The Department awarded 10 credits for Pinehills' private well restrictions. Specifically, the Pinehills governing documents prohibit the installation of private wells (*i.e.*, water-supply wells that are not regulated by WMA). Pinehills has certified that no unregulated wells will be installed during the permit period except for a well previously authorized in 2006. Special conditions 11 and 12 of WMA Permit 9P4-4-21-239.11 detail the documentation and certification of these standards.

Audubon Cooperative Sanctuary Program participation: The Department will award 9 credits for Pinehills obtaining recognition in the Audubon Cooperative Sanctuary Program (ACSP) for Golf. Note that this activity pertains specifically to OS Golf Club LLC (OS Golf). As specified in WMA Permit 9P4-4-21-239.09, OS Golf is required to obtain recognition in the following five ACSP components: Environmental Planning, Water Conservation, Wildlife and Habitat Management, Chemical Use Reduction and Safety, and Water Quality Management.

OS Golf shall obtain the ACSP component recognitions within three years. Once the ACSP recognitions are obtained, OS Golf shall renew the recognitions every three years through the life of the Permit. OS Golf will submit proof of 1) its Audubon International membership payment with its Annual Report Form each year; 2) recognition in the five components within three years of permit issuance; and 3) the recognitions every three years thereafter.

**Table C-3. Indirect credits per Pinehills mitigation activity**

MITIGATION ACTIVITY	CREDITS
ACSP Participation	9.00
Land Protection	15.00
Stormwater Standards	7.00
LID Practices	2.33
Private Well Restrictions	10.00
TOTAL CREDITS:	43.33